unreservedly at the disposal of every one anxious to carry on physical or chemical research.

"I do not think that FitzGerald ever harboured an angry or uncharitable thought about any one, nor have I ever known any one who, knowing him, did not regard him with the greatest love and respect; for he was known to be absolutely true to himself, and therefore to his fellow men. Although he held strong views on many points and could defend them with vehemence, his argument was never a personal one; and it was obvious that he was actuated solely by a love of truth, and that his only object was to defend what he thought to be right. Moreover, what FitzGerald thought to be right was pretty sure to turn out to be right in the long run. May I suggest as the reason why FitzGerald was so universally beloved, that he was a Christian in the truest sense of the word, and that he followed very closely the footsteps of his Master?"

In a letter from Prof. Tilden to the *Times* of February 27, in which, as Dean of the Faculty of Science of the University of London, he "places on record their high appreciation of his brilliant qualities as a man, as a teacher, as an investigator, as a leader of scientific thought," he goes on to speak on his own behalf of FitzGerald's modesty and extreme unselfishness, of the clarification and enlightenment which many a scientific man has owed to his inspiring conversation, of the "most memorable discourse" which he delivered to the Chemical Society in 1896 as the Helmholtz lecture. The key of deep personal loss is struck in a touching and eloquent tribute communicated to the *Electrician* by Dr. O. Lodge, and in a shorter notice in the *Times* and the *Philosophical Magazine*, coming from one who writes with authority on the industrial applications of science.

Prof. Perry, speaking as President of the Institution of Electrical Engineers, records that "in all engineering questions he had not only the laboratory experimenter's point of view, but also that of the practical engineer. His was a mind that saw the bearing of all scientific knowledge on any practical problem. I have no hesitation in saying that in Prof. FitzGerald our profession has lost one of its greatest, most beneficent forces." In proposing a vote of condolence, Prof. Ayrton spoke to the same effect.

The pride and affection which he inspired in his own College is revealed in a masterly appreciation contributed to the *Athenaeum* by one of his colleagues on the literary side. "His appearance was not unworthy of his fame. More striking he was than handsome; but his ample grey locks and beard, his furrowed brow, his penetrating eyes, reminded one of the bust of some Greek philosopher, which we cannot look upon without that instinctive feeling of respect which intellect and character command among civilised men."

For some years he had been in precarious health. He was subject to recurring attacks of digestive trouble; but the buoyancy with which he threw them off, and the unabated zeal with which he returned to his scientific pursuits in the intervals of health, concealed the real gravity of the situation. News of a sudden crisis was received in London and Cambridge with universal feelings of deep concern. He has now passed (on February 21) from the scene of an active and most beneficent career, in the fiftieth year of his age. His memory will not die. It will be carried on by a school of experimental physics, including the names of Joly and Preston and Trouton and W. E. Wilson, which he was mainly instrumental in creating; while in a wider sphere men such as Heaviside and Lodge and Ramsay and Perry have been proud to testify to their indebtedness and to claim him as their master. His scientific place will be henceforth alongside Rowan Hamilton and MacCullagh and Humphrey Lloyd, and the other famous men who have secured for the Dublin school so prominent a position in the edifice of modern physical science. In the higher domain of heart and conduct the recollection of his qualities will be an abiding treasure to all who knew him.

J. L.

NOTES.

We learn from the Political Notes in the *Times* that the recent dismissals at Coopers Hill College were discussed on Monday at a meeting held in one of the committee-rooms of the House of Commons. The meeting was convened by Sir W. Anson, Sir Michael Foster, Mr. Milward, and Mr. C. P. Trevelyan; and the attendance included Mr. Haldane, Mr. Emmott, Mr. C. Douglas, Mr. Yoxall, Mr. Palmer, Mr. Spear, Mr. E. Gray, Mr. Lecky, Mr. Cohen, Mr. J. G. Talbot, Mr. Bartley, Mr. Norman and Mr. Howard. Apologies for inability to be present were received from Sir R. Jebb, Sir J. Batty-Tuke, Mr. J. A. Campbell, Sir L. McIver and Mr. Leigh-Bennett. This list, it will be seen, includes not only members of all the British parties, but the representatives of all the Universities. It was decided to request another interview with Lord George Hamilton, in order to press upon him the necessity for an inquiry into the whole circumstances. Failing success in this endeavour the matter will be brought forward in the House at the earliest possible opportunity.

In the House of Commons on Tuesday, Lord George Hamilton said, in reply to a question by Mr. O'Mara:—Colonel Ottley's suggestions for the rearrangement of the course of study at Coopers Hill are dated June 13, 1900, and the report of the board upon them is dated the 24th of the same month. The visitors who signed the report are, with scarcely an exception, experts of the highest authority upon the technical questions submitted to them, and thay are selected in order that they may advise as experts.—Mr. O'Mara asked whether the conclusions were come to by the committee at a single sitting. Lord G. Hamilton said that the committee had the memoranda some time before them. The report was a long and exhaustive one, but he could not say whether its consideration only occupied one sitting. Mr. O'Mara: "Was not the meeting to consider the report called for the 24th, and did not the committee report the same day?" No reply was given. In answer to a further question by Mr. O'Mara, Lord G. Hamilton said:—Colonel Ottley was informed when he became president that the existing system of instruction was not considered to be satisfactory and required remodelling. Colonel Ottley has an unbroken experience of twenty-five years' service in India in almost every department of civil engineering, and the special knowledge he thus obtained of the training and capacity of the young engineers working under him from Coopers Hill pre-eminently qualified him to advise as to the special technical training required for the Public Works Department in India.—Mr. O'Mara asked whether he was to understand that the code of regulations, which provided that the president should be assisted by the teachers in regulating the course of studies, was not carried out by the present president. Lord G. Hamilton understood that Colonel Ottley had been in frequent communication with the teachers.

A small zoological expedition is just starting for the Malay Peninsula. It consists of Mr. N. Annandale, who was a member of the "Skeat" expedition to the Siamese Malay States in 1899, and Mr. H. C. Robinson, hon. research assistant in the Zoological Department of University College, Liverpool. They intend to settle for a year in the native State of Jalor, near the east coast of Lower Siam, and to explore the neighbourhood of Patani and Biseret. Collections will be made in all branches of natural history, while one of the special objects of the expedition is the study of the pre-Malayan tribes of Negrito stock who inhabit the centre of the peninsula. A thorough investigation will also be made of the fauna—both living and extinct—of certain very large limestone caves which are found in the district, and are said to extend for great distances underground. The birds of the district will also be studied, and observations made on mimicry and allied phenomena. The ethnographical work ought to be interesting, since Jalor is on the borderland in which the Siamese and Malay races meet. Mr. Robinson is supplied with dredges and townets for the investigation of the marine fauna, and he proposes, by the method of pumping sea-water through fine silk nets, to make a collection of the surface plankton of the Red Sea and Indian Ocean on the voyage out.

Commander R. F. Scott, R.N., in naval charge of the British Antarctic Expedition, has stated to a representative of Reuter's Agency that the preparations for the British Antarctic Expedition are now practically complete. The *Discovery*, the expedition's ship, will be launched on March 23, and, after she has been handed over by the contractors, will come round to London, where her equipment and provisions will be put aboard. The *Discovery* has been built on whaler lines, only with greatly increased strength to withstand ice pressure. She is 171 feet long, and 34½ feet beam, and has 1500 tons displacement. She will have auxiliary steam, and is fitted with engines of the latest type. In her construction the lines of the *Fram*, though carefully studied, have not been adopted, as Nansen's ship would have been ill-adapted for the heavy seas the *Discovery* will have to encounter. The expedition will leave London in July or August, and will proceed to Melbourne, reaching there in November. The actual work of the expedition will then begin. The naval staff, in addition to Commander Scott, consists of Lieut. A. R. Armitage, Lieut. Charles Royds, and two other officers yet to be appointed. The scientific direction will be under Prof. Gregory, of Melbourne University, assisted by Mr. Hodgson (biologist), and Mr. Shackleton (physicist). The medical staff will consist of Dr. Koettlitz and Mr. Wilson.

His Majesty the King has signified to the president and council of the Marine Biological Association his pleasure in becoming the patron of the Association.

A meeting of the International Association of Academies will be opened at Paris on April 16. Several delegates of the Royal Society will be present.

The Bessemer gold medal of the Iron and Steel Institute for 1901 has been awarded to Mr. J. E. Stead, of Middlesbrough, in recognition of the value of his researches on iron and steel. The presentation will take place at the annual general meeting on May 8. Owing to the death of the Queen, the annual dinner will not be held. The autumn meeting will be held in Glasgow, simultaneously with the International Engineering Congress on September 3 to 6.

The Naples Academy of Mathematical and Physical Sciences has awarded the mathematical prize of 1000 lire for 1899 to Dr. G. Torelli, professor at Palermo. The subject fixed was the totality of prime numbers. The theme for the next award is the theory of invariants of the ternary biquadratic considered preferably in relation to the conditions for splitting into lower forms. The essays may be written in Italian, French or Latin, and must be sent in, designated by a motto, before March 31, 1902.

The success of the banquet recently given to Prof. Marey by the Scientia Club of Paris, has induced a number of his colleagues, friends and students to form themselves into a committee having for its object the presentation to him of a medal in token of their esteem. There are probably others who would like to show their appreciation of Prof. Marey's work by subscribing to the fund being raised for the preparation of the medal to be struck in his honour. Subscriptions should be sent to M. P. Masson, 120, Boulevard Saint-Germain, Paris.

The Easter cruise to the Isles of Greece, organised by Dr. Lunn and Mr. Perowne for schoolmasters only, is, we understand, already full. As the idea is evidently an attractive one, another cruise to the principal cities of Spain has been arranged for the Easter vacation, under the direction of Mr. E. H. Blakeney, of the Sandwich Grammar School. The party will leave London on the Wednesday morning before Easter, spending Good Friday at Burgos, Easter Day at Madrid, and visiting Cordova and Seville. Those who then wish to return to England can do so, and will get into the direct express at Seville. A party, however, will be formed to visit Granada, returning from Granada to Seville; and a further section will visit Toledo, those who have not time to take in both cities going straight back, after the visit to Granada, from Seville to London. During the cruise Mr. Blakeney will deliver a couple of lectures on (1) "The Moorish Domination in Spain, (2) "Some Cities and Cathedrals of Spain." We should like to see similar cruises organised for men of science, as has already been done in connection with the *Revue générale des Sciences* (see p. 381).

The fifth triennial International Congress of Physiologists will be held at Turin, September 17 to 23 of this year. The Institute of Physiology of the University, under direction of Prof. Angelo Mosso, will be placed at the disposal of the Congress. The membership of the Congress is open to (1) representatives of physiological and similar purely scientific societies, for example, the Physiological Society, England; the American Physiological Society; Société de Biologie, Paris; Physiologische Gesellschaft, Berlin. (2) Persons proposed by the National Committee of their own country. In connection with the Congress an exhibition of apparatus will be open from September 14 to 23. To it the Marine Biology station at Naples will contribute a collection of marine forms of animal life useful for comparative physiology. In addition to the General Secretaries, for the work of preparation toward the the fifth Congress, Dr. F. S. Lee, secretary of the American Physiological Society, will discharge secretarial duties in the United States. Those desirous of attending the Congress or contributing to the exhibition should communicate with Prof. Sherrington, General Secretary for the English-speaking countries, Thompson Yates Laboratories, the University College, Liverpool.

The *British Medical Journal* announces that Dr. Gerhard Armauer Hansen, the discoverer of the lepra bacillus, will celebrate his sixtieth birthday on July 29. His friends and admirers, both in and out of the medical profession of Norway, have decided on that occasion to erect a marble bust of him in the Lungegaard Hospital, Bergen, where he discovered the bacillus. A committee of Norwegians has been appointed to solicit subscriptions from Dr. Hansen's friends in the Scandinavian countries, and Prof. Lassar, of Berlin, has undertaken to collect subscriptions for the purpose on the continent.

A conference was held at Liverpool on Monday between representatives of the Liverpool and Manchester Chambers of Commerce and the Liverpool School of Tropical Medicine, with reference to the unhealthy conditions of the towns on the West African coast. Mr. A. L. Jones, who presided, said that the West African merchants and shipowners would do well in their own interest, as well as in the interests of humanity, to take advantage of anything that would tend to improve the conditions of life of the people they might send to the tropics to push their commerce. Hitherto Liverpool merchants had had more to do with the development of trade in that part of the world than perhaps any other merchants. That trade promised to be of great magnitude, and no amount of time and money could be devoted to a better purpose than to improve the conditions of life on the West Coast. They in Liverpool had done something by establishing the School of Tropical Medicine, which had inspired the whole world with a sense of its responsibility. Prof. Boyce suggested that the chambers should send out an expedition of experienced medical men and a young engineer to draw up definite schemes for drainage and water supply. Mr. A. Hutton, chairman of the African section of the Manchester Chamber of Commerce, declared that the sanitary condition of some West African coast towns was disgraceful. If they dedecided that a commission should be sent out they had better send it themselves, and not wait for the Government. Major Ross agreed with the suggestion to send out another commission. Municipal regulations, he said, were absolutely ignored on the coast, and the Government should be urged to take an interest in the matter. It was unanimously decided to ask Mr. Chamberlain to receive a deputation to consult with him on the questions of sewage disposal, water supply, malaria, and dysentery in West Africa.

A REGRETTABLE state of affairs with regard to the preparation of a Lexicon of the native language of New Zealand, is described in an obituary notice of the Rev. W. Colenso, F.R.S., just published in the "Year Book of the Royal Society." We trust that the following plain statement of the position of the work will lead to something being done to ensure its completion. "In 1861 Mr. Colenso entered Parliament as representative of Napier, when he moved and carried a resolution that the time had come for the State to make an organised attempt to rescue the dying language of New Zealand from oblivion. Being at the time unable to undertake such a work himself, he offered to present the Government with his whole collection of materials for it. In 1865 the Government took up the subject, and in 1866 Mr. Colenso, then being more at liberty, was successfully urged, as the one man in New Zealand thoroughly qualified, to take up the work. Seven years was fixed for its completion, the remuneration to be 300*l*. per annum. Before half that period had expired, another Ministry, with other views of the value of a Lexicon, had supervened, by whom its author was informed that, half the time allowed for the completion of the work having expired, one-half of the work itself should have been in the press. On the unreasonableness of this view in the case of a work requiring innumerable cross references being represented, a committee of qualified persons was appointed to examine and report on the progress made. The report was to the effect that the author had advanced further in his work than was due up to the time employed, that thousands of pages had been written from the first word to the last, and that seven years was too short a time for the completion of a work of such magnitude. The report was withheld from Parliament, funds for proceeding with the Lexicon were refused, and the unfinished materials were thrown upon the author's hands, one finger of which was permanently disabled by writer's cramp, due to his labours on the Lexicon. A sample portion was, however, demanded to be laid before the House, and letter A produced, but this was "lost," and not discovered till eighteen years afterwards in a departmental pigeon-hole. It was then printed and distributed by Government, partly at its author's expense, in the year preceding his death. Its appearance, dedicated to his old friend Sir George Grey, has been followed by urgent representations to the Colonial Government that the whole materials, which are bequeathed to the State, should be entrusted to a competent editor for publication."

WE have received from Dr. Hergesell, president of the International Aëronautical Committee, a preliminary account of the results of the ascents on February 7. A manned balloon from Cracow attained a height of 4000 metres and recorded a minimum temperature of -11° F. One of the unmanned balloons from Berlin reached an altitude of 9490 metres and registered a temperature of -67°; a manned balloon was also sent up. Two unmanned balloons ascended from Trappes (near Paris); one of them reached 12,700 metres and recorded a temperature of -67°. From Strassburg two ascents were made; a paper balloon rose to 8000 metres and a temperature of -49° was registered. Ascents were also made from Vienna and Bath. M. Teisserenc de Bort has promised to send one of his coadjutors to Moscow with the view of organising unmanned balloon ascents from that place.

An interesting description of the Lake Superior mining district is contributed to the *Century Magazine* by Mr. W. Fawcett. The yearly output of ore in the district amounts to twenty million tons, which is more than double the product of any other iron-mining region in the world during any single year in history. None of the mines in the Lake Superior country are more than a hundred miles from the lake, but the hills on the summits of which the deposits are found are, in some cases, more than a quarter of a mile above the level of the lake. Several methods of mining are in vogue in the four ranges of the iron region. On the Mesabi range the ore is taken out by means of steam-shovels. The Mesabi ore is found in great masses on the slopes of hills, and virtually the only task before the miner is to scoop it up and load it into the trucks standing on the siding, which are run into the mine just as trucks are often backed into a stone-quarry. Out of some of these immense holes in the ground more than a million tons of ore are taken every year, and it is all dipped up by steam-shovels. Improved systems of mine haulage are also used. Electric or compressed-air motors draw trains, each composed of about twenty trucks, from the mouth of the shaft to the point underground where the ore is being dug out, and machine-drills, driven by compressed air, have displaced the hammer and drill of the pioneer miner.

AT the Institution of Civil Engineers on Tuesday, February 26, Messrs. W. H. Stanger and B. Blount described the rotatory process of manufacturing cement. By this process it is possible to approach the theoretical ratio of acids to bases, and to obtain a cement which is stronger and sounder than the best cements commercially prepared by discontinuous processes. The largest and most complete installation of rotatory kilns is that at the works of the Atlas Cement Company of Northampton, Pennsylvania. The output of this works is between 8000 and 9000 tons per week, *i.e.* about four times the amount of most large European works, and the whole quantity is obtained from rotatory kilns. The raw materials used by the Atlas Company are a calcareous shale and a limestone. These are crushed, dried, finely powdered and fed mechanically into rotatory kilns. The kilns are steel cylinders 60 feet by 6 feet 6 inches, set on a slight incline and capable of being rotated by suitable gearing. The fuel is powdered coal driven in by a blast of air through an injector burner at the lower end of the kiln. An intensely hot flame, readily controllable, is thus produced, and heats the raw materials introduced at the upper end of the kiln, and caused to travel downwards in a direction opposite to that of the blast. The materials are thus heated systematically, and at the lower end of the kiln near the burner become converted into clinker. This falls into a rotating cylinder lined with firebrick, through which passes a current of air serving to feed the coal-dust flame. A great part of the heat of the clinker is thus regenerated. The clinker is then roughly crushed between rolls which work under a spray of water and passes through a final rotating cooler into trucks, by which it is conveyed to stock-boxes over the grinding plant. From the crushing of the raw materials to the storing of the finished cement, no hand labour was employed, all conveyance, distribution and transmission being done mechanically.

In the *Journal* of the Royal Statistical Society, lxiii. part iv., Mr. Thomas Welton discusses the distribution of population in England and Wales and its progress from 1801 to 1891. In 1801 the author finds (1) that urban populations, including most small towns, amounted to 35 per cent. of the total population; 2) that rural districts, exclusive of areas surrounding towns, included 91 per cent. of the total area; (3) that "populous" areas were less than 1 per cent. of the whole; (4) that the density of population averaged 47 per square mile in sparsely peopled districts and 103 per square mile in the better peopled rural districts. In the unprogressive districts, Mr. Welton finds much uniformity (1) in the comparative large increase of population from 1811 to 1821; (2) in the maintenance of a reduced increase from 1821 to 1841; (3) in the prevalence of low rates of increase in unprogressive towns and populous districts from 1851 to 1891; (4) in the absolute decrease of population in rural districts, with certain exceptions, from 1851 to 1891. The general inquiry brings out the vast change in the territorial distribution, the amount and the means of support of our population since 1801, and at the same time the moderate extent of country affected by the developments of this period.

The whole of Part i. of vol. lxix. of the *Zeitschrift für wissenschaftliche Zoologie* is devoted to an important paper by Herr J. Meisenheimer on the developmental history of the bivalve mollusc *Dreissensia polymorpha*. In addition to figures in the text, the memoir is illustrated by thirteen beautifully executed plates.

We have received the tenth annual report of the Society for the Protection of Birds. The advance of this body, both in the number of its members and in its financial resources, is reported to be steady, although its efforts might be greatly extended if a larger income were at the disposal of its council. Among the efforts of last year, a special crusade has been made against the pole-trap; and, as a model to other landlords, a paper of instructions has, by permission, been issued to the gamekeepers on the estate of Lord Barnard, forbidding the use of this instrument and the destruction of certain specified birds. The practice of ornamenting poulterers' shops with the carcasses of non-edible birds at Christmas has also been discouraged. The announcement of several clutches of great skua eggs for sale in London last June drew the attention of the Society to the necessity of further protection for the bird in question; and on their initiation a proposed sale at the same time of the eggs of other British birds taken during last season was abandoned. Attention is also directed to the resolution recently passed by the B. O. U., discouraging the collecting of eggs or skins of certain of our rarer birds. The latter part of the report deals with work abroad.

In the *Ibis* for January, Mr. Chalmers Mitchell, from the study of the anatomy of kingfishers, makes a further important contribution to a right understanding of that peculiar feature in the arrangement of the quills of the wings of certain birds now known as "diastaxy." It will be within the recollection of many of our readers that in 1899 Mr. Pycraft and Mr. Mitchell independently made communications to the Linnean Society in which they showed that the gap which occurs in the diastaxic wing is not due to the loss of a quill, whence they were led to abrogate the original term "aquinto-cubitalism." In his own communication Mr. Mitchell showed that among pigeons both "diastaxy" and "eutaxy" (a regular series of quills) might occur, and also that the latter was the more specialised type. Similar conditions are now shown to obtain among the kingfishers, in which also, as indicated by their myology, eutaxy is the specialised modification. The gradual change from perfect diastaxy to complete eutaxy in this group is most clearly explained by the diagrams illustrating Mr. Mitchell's communication.

Article 19 of vol. xiii. of the *Bulletin* of the American Museum of Natural History contains a revised memoir on the phylogeny of the European rhinoceroses, by Prof. H. F. Osborn. The author is of opinion that the rhinoceroses (inclusive of the Siberian Elasmotherium) are divisible into six distinct phylogenetic subfamilies, three of which are represented by existing members of the family. Rhinoceros proper, he considers, is now restricted to the Indo-Malay countries, as is Ceratorhinus, as represented by the Sumatran species, the two African species being assigned to a third genus, Atelodus. More importance is attached to the structure of the skull (especially the form of the nasal bones) than to that of the molar teeth, which may have been independently modified for grass-eating in two or more species. Accordingly, Elasmotherium, in place of being considered a specialised type akin to the white rhinoceros of Africa, is affiliated to the middle Tertiary Aceratherium. Again, the great two-horned rhinoceros of the Indian Siwaliks (*R. platyrhinus*) is removed from its association with the aforesaid African species to find a position next to the living Sumatran animal.

The Council of the Zoological Society has given instructions for the publication of an index-volume to the new generic names mentioned in the "Zoological Record," vols. xvii.-xxxvii. (1880-1900). The volumes previous to vol. xvii. have been indexed in the "Nomenclator Zoologicus" of Scudder, published by the Smithsonian Institution in 1882. The contemplated index-volume of the "Zoological Record," in order to increase its usefulness, will include names omitted from Scudder's list and from the volumes of the "Zoological Record." Thus zoologists may have at their disposal (in the "Nomenclator Zoologicus" and the new index together) a complete list of all the names of genera and subgenera used in zoology up to the end of 1900. It is requested that any one who knows of names omitted from Scudder's "Nomenclator," or from the volumes of the "Zoological Record," will forward a note of them, together, if possible, with a reference as to where they have been noticed or proposed, so that the new list may be made practically complete. Such information should be addressed to the editor of the "Zoological Record," 3 Hanover Square, London, W.; or to Mr. C. O. Waterhouse, British Museum, Natural History, South Kensington, London, who is engaged in compiling the list.

The *Journal* of the South-Eastern Agricultural College contains an article by the Principal, Mr. A. D. Hall, on the economic aspects of the cultivation of sugar beet in England. The matter is gone into very fully, both from the point of view of utilising the produce as food for farm stock, and of the manufacture of sugar. In a feeding experiment with sheep, where mangels were tried against sugar beet, the advantage rested with the mangels, the writer's verdict being that "The superiority of the mangold is very manifest, and it is clear that it will not pay the farmer to grow sugar beet for feeding purposes." Nor, with foreign bounties on exported sugar, does it appear that there is any prospect of producing sugar at a profit in England. The writer has shown that the price obtained by the German grower cannot be looked for in this country, and concludes that "At the present price of sugar, no factory could afford to pay for sugar-beet a price that would be remunerative to the farmer." The same issue of the *Journal* also contains an article by Mr. Hall on the influence of certain manurial substances on the quality of barley, the results of his experiments being confirmatory of the best agricultural practice, namely, that though a moderate dressing of soluble phosphate may not have much effect on the yield, it produces a marked improvement on the quality of the grain.

THE *Revue Scientifique* contains an article by Prof. Thoulet on the International Congress of Oceanography held at Stockholm in 1899. A full account is given of the proceedings and conclusions of the Congress, and Prof. Thoulet expresses profound regret at the non-participation of the French Government and at the lack of interest in the subject in France generally. A number of the physical and chemical points dealt with by a section of the Congress are discussed, and certain questions raised, particularly with regard to the specific gravity of sea-water *in situ*, which merit the attention of the Committee appointed by the Congress to report on such matters.

La Géographie contains an account of two scientific expeditions on the east and west coasts of Madagascar, by Mr. E. Colin. The work of these expeditions was chiefly topographical and magnetic. From Andevorante, Vatomandry and Mahanoro the coast turns more to the south-south-east than appears on the maps, and the positions of the two last-named towns lie more to the south. Combining the magnetic observations of 1892, 1896 and 1900 at Tamatave, Ampanotoamaisina, Andevorante, Vatomandry, Marosika, and Mahanaro, it appears that along the zone of the east coast the declination increases and diminishes alternately in the order of the stations named, the maximum occurring at Andevorante and the minimum at Vatomandry; and that the declination and dip vary in opposite directions.

A REPORT on the permo-Carboniferous Coal-measures of Clermont, by Mr. B. Dunstan, has been published by the Geological Survey of Queensland. In the district described there are several tracts of Coal-measures, the largest area exposed being that of Blair Athol. There are also tracts of granite, of slates and schists with auriferous quartz-reefs, and of Devonian and Tertiary strata. It appears that upwards of 65,000 tons of coal have been obtained from the Blair Athol coal-field during the past ten years, and that more than seven million tons of the best Clermont coal are still available. The coal is well adapted for locomotives, and has been mainly used for them. It is remarked that in the Coal-measures there are strata derived from the auriferous slates and schists, and that therefore there might have been streams entering the old Carboniferous lagoon, which brought gold into channels now hidden by more recent accumulations: hence future developments may lead to the discovery of some of these gold-bearing alluvial deposits below the coal-seams.

THE ninth course of public lectures in connection with the Childhood Society, which exists for the scientific study of the mental and physical conditions of children, will be given in the library of the Sanitary Institute on Thursday evenings during this month. The subjects will be, Food dietaries in relation to school life, by Dr. R. Hutchinson; Examinations in their relation to mental growth, by Prof. H. L. Withers; Experimental psychology, and the study of childhood, by Dr. W. H. R. Rivers; Observations of children after the methods of natural history, by Dr. Francis Warner.

IN view of the widespread opinion that in future many of the fundamental principles of theoretical chemistry will have to find a place in elementary lectures on inorganic and analytical chemistry, we note with interest a series of lecture experiments described by Messrs. Noyes and Blanchard in the *Zeitschrift für physikalische Chemie*, vol. xxxvi. pp. 1–27. The experiments illustrate various phases of the theory of electrolytic dissociation, the laws of equilibrium in solution and the velocity of chemical reaction. They are well chosen, and the necessary details of manipulation are carefully described.

Bulletin No. 89 of the U.S. Department of Agriculture (Office of Experiment Stations) consists of a report of experiments on the effect of muscular work upon the digestibility of food and the metabolism of nitrogen, carried out at the University of Tennessee by Prof. C. E. Wait. Although the effect of muscular work has been considered already in numerous dietary studies, yet up to the present very little information in this special connection has been obtained. As a result of sixteen detailed experiments it is found that, comparing the elimination of nitrogen in the urine during the periods of little muscular activity and normal diet with that during periods of increased activity and a diet furnishing energy largely in excess of the heat equivalent of the measured work performed, there is a slight decrease under the latter condition. This is true even when the possibility of a lag of considerable duration between the breaking down of nitrogenous material within the body and the excretion of nitrogen in the urine is admitted.

AMONG the recent captures made at Plymouth by the Marine Biological Association the most noteworthy are the polychæte *Bispira voluta-cornis*, the crustacea *Galathea strigosa* and *Pirimela denticulata*, the mollusca *Lima hians*, of which many specimens were found in a small patch of muddy stones, making their nests in the crevices between the stones, *Pinna pectinata* and *Scalaria communis*, and the Blenny *Blennius galerita*, of which a small specimen was found between tide-marks. The following animals, among others, are breeding:—Crustacea: *Galathea squamifera*, *Eurynome aspera*, *Pirimela denticulata*, *Gnathia maxillaris*, *Dynamene rubra*. Mollusca: *Lacuna vincta*, *L. pallidula*, *Purpura lapillus*. Pisces: *Cottus bubalis*. An increasing number of larval forms is shown by the tow-net captures, especially of Trochospheres, Veligers, Nauplii and Zoææ. It is to be feared that the octopus (*Octopus vulgaris*) will again be in evidence this summer, as there are already records of its appearance at Plymouth and Mevagissey.

THE additions to the Zoological Society's Gardens during the past week include a Sooty Mangabey (*Cercocebus fuliginosus*) from West Africa, presented by Mr. W. Field; a White-fronted Capuchin (*Cebus albifrons*) from South America, presented by Mr. E. P. Rickcord; a Sykes's Monkey (*Cercopithecus albigularis*) from East Africa, presented by Mr. Geo. Smithers; a Blotched Genet (*Genetta tigrina*) from Africa, presented by Captain R. L. Haddock; a Slender-billed Cockatoo (*Licmetis nasica*) from South Australia, presented by Lady Gertrude Lawford; a Virginian Colin (*Ortyx virginianus*) from North America, presented by Mr. B. N. H. Jones; a White-collared Teetee (*Callithrix torquatus*) from Brazil, a Pig-tailed Monkey (*Macacus nemestrinus*) from the East Indies, a Red-bellied Thrush (*Turdus rubriventris*), a Blue-fronted Amazon (*Chrysotis aestiva*) from South America, a Rose-coloured Pastor (*Pastor roseus*) from India, two Fox Sparrows (*Passerella iliaca*), two Chipping Sparrows (*Spizella socialis*), two Snow Birds (*Junco hyemalis*), two White-throated Song-Sparrows (*Zonotrichia albicollis*) from North America, two Undulated Grass Parrakeets (*Melopsittacus undulatus*) from Australia, a Sclater's Cassowary (*Casuarius philipi*) from New Guinea, three Toco Toucans (*Ramphastos toco*) from Guiana, an Allen's Porphyrio (*Hydrornia alleni*) from West Africa, deposited; two Emus (*Dromaeus novae-hollandiae*) from Australia, purchased; four Chinese Bulbuls (*Pycnonotus sinensis*) from China, received in exchange.